DESCRIPTION OF A NEW SPECIES OF SALAMANDER FROM PANAMA

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A series of forty-seven specimens of the genus *Magnadigita* from the crater of Volcán Baru, Chiriquí Province, Panama, represents an unique new species for this genus. We are indebted to Captain Vernon J. Tipton for having collected the type and paratypes, at Brigham Young University (BYU), and to the following for a loan of additional type specimens: Charles M. Bogert and Richard G. Zweifel, American Museum of Natural History (AMNH), Alan E. Leviton, California Academy of Sciences (CAS) and James E. Böhlke, Academy of Natural Sciences in Philadelphia (ANSP).

Because this salamander has a marbled color pattern, it is to be known as

Magnadigita marmorea sp. nov.

Type.—Brigham Young University No. 17704, from the crater of Volcán Baru (Chiriquí), elevation 10,500 feet, Chiriquí Province, Panama. Collected May 1, 1960 by Vernon J. Tipton.

Paratypes.—BYU 17700-3 and 17705-11 all topotypes; AMNH 54392-9 taken between December 10 and 12, 1948 by Vladimir Walters, P. F. Scholander, and Carlos E. Hooker at 11,300 feet elevation; ANSP 20846, taken by Enders, 1937 at 11,480 feet; CAS 79621-34 and 79637-46, taken between August 10 and 12, 1939, by J. R. Slevin and Robert Terry. All from the Volcán Baru, Chiriquí Province, Panama.

Diagnosis.—A medium-sized species, seemingly more closely related to *subpalmata* but differing in having longer legs, in which the toes of the adpressed legs usually touch; and with fewer maxillary and mandibular teeth and more vomerine teeth. The new species is different from other Costa Rican and Panamanian species in having an increase of vomerine teeth with little space between the series, caudal grooves faint or obliterated and with a marbled color pattern over the entire body.

Description of Type.—Head flattened, its diameter between eyes (4.3 mm.) only half of widest part (9.8 mm.); eye large, its diameter (3.5 mm.) greater than distance to nostral (3.0 mm.), eyelid (2.7 mm.) narrower than interorbital distance (3.2 mm.); snout truncate, distance between nostrals, 3.1 mm.; head without grooves or folds, subnarial grooves and swellings small; gular fold prominent, extending to a dorsolateral position; 13 costal grooves counting one each in axilla and groin, grooves not extending onto abdomen; caudal grooves, 33, not distinct; maxillary teeth, 34-34; premaxillary teeth, eight; vomerine teeth, 16-16 on two ridges which extend lateral to choanae, the two series forming a median V-pattern, and separated

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medially by a distance equal to two teeth, separated from paravomerine teeth by a distance greater than diameter of choanae; para-

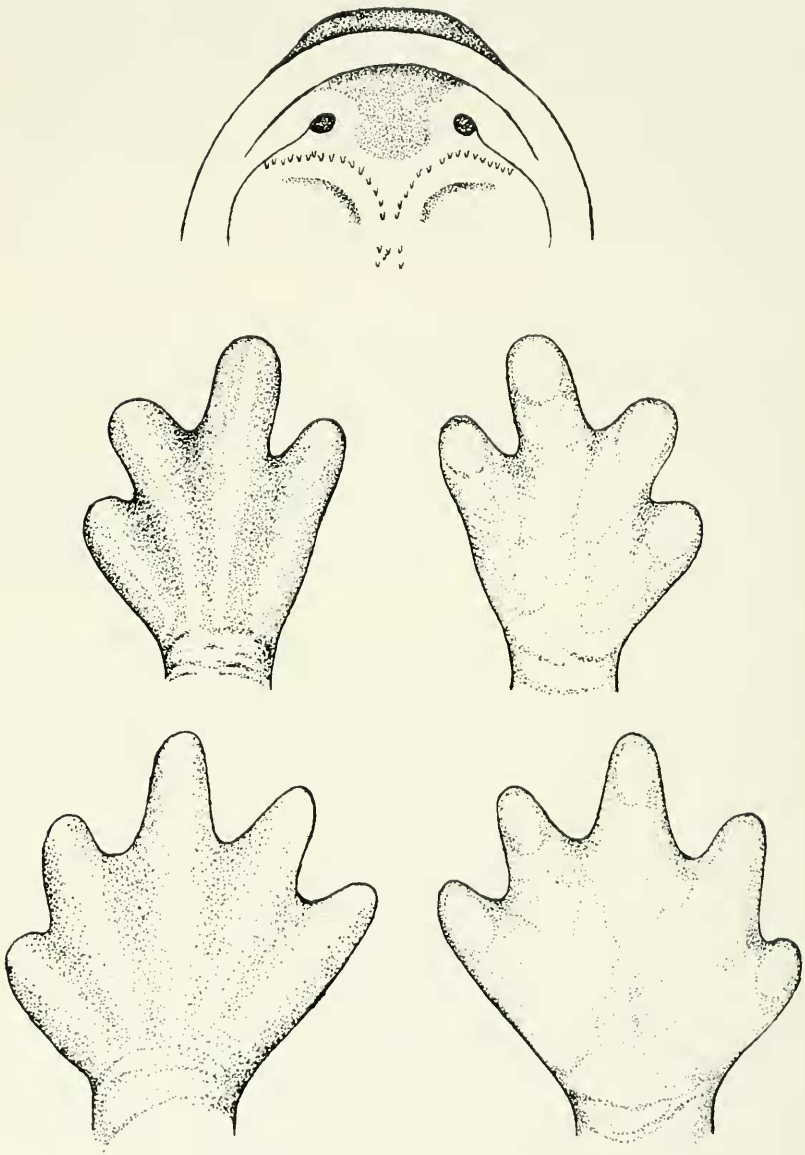

Fig. 1. Type of *Magnadigita marmorea*, BYU No. 17704. Top, roof of mouth showing position, numbers of teeth and spacing. Middle, right hand, dorsal and ventral views. Bottom, right foot, dorsal and ventral views. × 5.

vomerine teeth in one group of 161 teeth, narrowly separated posteriorly; mandibular teeth, 36-36; tongue free, no trace of a sublingual fold; body subcylindrical, tail laterally compressed; skin smooth ventrally and finely corrugated dorsally; no postiliac gland; and tail constricted posterior to vent. First finger and toe fully webbed, middle ones with the terminal two phalanges free, outer ones with only one phalanx free; all digits with a subterminal pad ventral to the first phalanx.

Measurements in mm.—Snout to anterior end of vent, 60.1; total length, 130; fore leg, 16.2; hind leg, 17.0; axilla to groin, 35.3.

Color.—Entire dorsal surface a dark slate, marbled with a rusty buff. Sides with large irregular blotches of yellowish (perhaps with some buff in life) venter of abdomen and tail mostly slate black, gular and throat a uniform dark gray.

Variation.—The largest specimen in the type series is a female, CAS 79632, 68.6 mm. snout to posterior end of vent and with a total length of 132.6 mm. The largest male, CAS 79625, is 65.5 mm. snout to vent and with a total length of 128.8 mm. The males have a large hedonic gland on chin, and prominent swellings at the base of naso-labial groove. In adults the tail is slightly longer than the head and body but in juveniles (BYU 17710-11) the tail is shorter (33.2 S-V, total 58 mm.). Proportionate lengths of the front and hind legs are nearly equal, but with the fore limbs slightly shorter. Adpressed legs ranging from approximately one fold between toes to an overlapping of the first phalanx, in others the toes touch. An age variation in proportionate leg and body size is not apparent in this series.

Costal grooves are usually thirteen, but in some specimens of the BYU series it is difficult to count more than twelve grooves. In both axilla and groin the grooves are faint or obscure, however, this has been taken into consideration and questionable specimens have been given an extra groove, the tail does not exhibit clearly the grooves. In only three specimens is it felt that the count may be reliable. In these the grooves range from 32-35. At the base and end a few grooves are clearly discernible, but the middle section is usually obscure. First groove on the tail forms a slight but obvious constriction.

Maxillary teeth range from 24-40 in all specimens over 50 mm. in snout to vent length, with an average of 32. Premaxillary teeth 4-8; mandibular teeth, 30-36; vomerine teeth, 11-19, average 13.3. In specimens with fewer than 26 teeth there is a reduction medially producing a wider V-pattern pointing toward the paravomerines. A full set of vomerines appears to be 14 to 16 teeth. Paravomerine teeth appear as one group joined anteriorly and separated posteriorly by a deep notch, range 135-181, average 164 teeth.

The basic ground color is dark slate to black. There are two exceptions: BYU 17703 is a rusty buff with only fine stipplings of dark pigment; BYU 17706 is a yellowish cream with larger areas of marbled dark color. Venters are usually dark with only small ir-

regular light spots and marblings. Both pair of appendages and the tail are involved in the basic color pattern.

Remarks.—This species, as well as many other salamander species from Central America, was taken from under rocks in the crater of an old volcano. The genus *Magnadigita*, as well as other genera of Plethodontidae, has been shown by the works of several Central American collectors (E. R. Dunn, Karl Schmidt and E. H. Taylor) to represent a widespread group of species in which through adaptive radiation many of the ecological niches are now occupied by distinct species. We suspect, therefore, that the *marmorea* is related not only to *subpalmata* but also to other Costa Rican species such as *pesrubra*, *torresi* and perhaps *cerroensis*.

LITERATURE CITED

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